wherein the promoting material comprises one or more elements selected from the group consisting of group 14 elements.

7. (Amended) A method of manufacturing a semiconductor device, comprising the steps of:

applying a solution, in which a simple substance of a catalytic element for facilitating crystallization of amorphous silicon film or a compound containing the catalytic element is dissolved or dispersed, on a semiconductor film comprising amorphous silicon;

baking said semiconductor film to form a film comprising said catalytic element on said semiconductor film;

crystallizing the amorphous silicon film by carrying out a heat treatment;

removing said film comprising said catalytic element from a surface of the semiconductor film after the heat treatment; and

promoting crystallinity by irradiation of laser light or intense light, wherein a kind of or plural kinds of elements selected from elements in group 14 are used as the catalytic element.

16. (Twice Amended) A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

forming a film comprising germanium in contact with said semiconductor film by vapor phase deposition with a germanium compound gas;

heating said semiconductor film with said film comprising germanium to crystallize said semiconductor film; and

removing the film comprising germanium from a surface of said semiconductor film without changing a shape of said semiconductor film after the heating said semiconductor film.

20. (Twice Amended) A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

forming a film comprising germanium in contact with said semiconductor film by vapor phase deposition with a germanium compound gas;

heating said semiconductor film with said film comprising germanium to crystallize said semiconductor film;

removing the film comprising germanium from a surface of said semiconductor film without changing a shape of said semiconductor film after the heating said semiconductor film;

patterning the crystallized semiconductor film into at least one semiconductor island; and

forming a thin film transistor with said semiconductor island used as at least a channel forming region thereof.

40. (Amended) A method of manufacturing a semiconductor device comprising the steps of:

forming a semiconductor film comprising amorphous silicon on an insulating surface;

forming a film comprising germanium in contact with said semiconductor film by vapor phase deposition with a germanium compound gas;

heating said semiconductor film with said film comprising germanium to crystallize said semiconductor film;

removing the film comprising germanium from a surface of said semiconductor film after the heating said semiconductor film; and

irradiating laser or intense light to said semiconductor film after the removing the film comprising germanium.

Please add the following new claims:

-- 41. A method of manufacturing a semiconductor device, comprising the steps of:

forming a semiconductor film comprising amorphous silicon;

crystallizing the semiconductor film by a heat treatment while a promoting material for facilitating crystallization is retained on the semiconductor film; and

removing the promoting material for facilitating crystallization on a surface of the semiconductor film without changing a shape of the semiconductor film after the heat treatment,

wherein the promoting material comprises one or more elements selected from the group consisting of group 14 elements.

42. A method of manufacturing a semiconductor device, comprising the steps of:

applying a solution, in which a simple substance of a catalytic element for facilitating crystallization of amorphous silicon film or a compound containing the catalytic element is dissolved or dispersed, on a semiconductor film comprising amorphous silicon;

baking said semiconductor film to form a film comprising said catalytic element on said semiconductor film;

crystallizing the amorphous silicon film by carrying out a heat treatment; and

removing said film comprising said catalytic element on a surface of the semiconductor film without changing a shape of the semiconductor film after the heat treatment,

wherein a kind of or plural kinds of elements selected from elements in group 14 are used as the catalytic element.

C6 Cont.

43. A method of manufacturing a semiconductor device, comprising the steps of:

forming a semiconductor film comprising amorphous silicon;

providing the semiconductor film with a promoting material for facilitating crystallization is retained on the semiconductor film;

crystallizing the semiconductor film by a heat treatment;

removing the promoting material from the crystallized semiconductor film after the heat treatment,

promoting crystallinity of the crystallized semiconductor film by irradiation of laser or intense light after the removing the promotion material; and

patterning the crystallized semiconductor film to form at least one semiconductor island after irradiation of laser or intense light,

wherein the promoting material comprises one or more elements selected from the group 14 elements.

C16 Cancel

44. A method of manufacturing a semiconductor device according to claim 43, wherein said promoting material is removed from a surface of the crystallized semiconductor film without changing a shape of the crystallized semiconductor film.--

REMARKS

At the outset, the Examiner is thanked for the review and consideration of the present application.

The Examiner's Final Office Action dated April 25, 2001, has been received and its contents reviewed. Claims 5-9 and 16-40 were pending in the present application prior to this Amendment. By this Amendment, claims 19, 23 and 39 have been canceled, claims 5, 7, 16, 20, and 40 have been amended, and new claims 41-44 have been added. Accordingly, claims 5-9, 16-18, 20-22, 24-38, and 40-44 are pending, of which claims 5, 7, 16, 20, and 40-43 are independent.

Referring now to the Office Action, claims 5-9, and 39-40 are rejected under 35 U.S.C. §102(e) as allegedly anticipated by Miyanaga et al. ('893), and claims 16-38 are rejected under 35 U.S.C. §102(e) as allegedly anticipated by Mitanaga ('997). These rejections are respectfully traversed for at least the reasons provided below.

With respect to the 35 §102(e) rejection over Miyanaga et al., independent claims 5, 7, 16, 20, and 40 have been amended to recite the steps of removing the promoting material for the film comprising the catalytic element or germanium from a surface of the semiconductor film. Support for the amendments can be found at least in, e.g., page 9, lines 23-24, and page 13, lines 29-30.

A characteristic of the presently claimed invention is a step of removing the promoting material for facilitating crystallization from a surface of the semiconductor film after the heat treatment.